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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/756,997	01/08/2001	Caroline Boulenger	FR919990065	6885

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INTERNATIONAL BUSINESS MACHINES CORPORATION  
DEPT. 18G  
BLDG. 300-482  
2070 ROUTE 52  
HOPEWELL JUNCTION, NY 12533

EXAMINER

NOVACEK, CHRISTY L

ART UNIT PAPER NUMBER

2822

DATE MAILED: 12/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/756,997

Applicant(s)

BOULENGER, CAROLINE

Examiner

Christy L. Novacek

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the amendment filed September 18, 2002.

#### ***Response to Amendment***

The Examiner agrees with Applicant's arguments regarding the rejections of claims 1-11 under 35 U.S.C. 103(a) as being unpatentable over the Lu (US 6,372,408), Danh (US 5,983,907) and Wedding, Sr. (US 5,793,158) references. Therefore, these rejections are hereby withdrawn.

#### ***Drawings***

Figures 1A-1D should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As amended, line 6 of claim 1 recites the limitation of heating the wafer to a temperature of "100-400°C". However, the specification does not provide support for the wafer

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to be heated to a temperature above 140°C. Claims 2-5 are rejected because they are dependent upon claim 1.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Murphy et al. (US 6,387,822).

Regarding claims 6 and 9, the admitted prior art discloses providing a semiconductor wafer (11) having a photoresist layer (16) formed thereon, and exposing, baking and developing the photoresist layer to produce a patterned photoresist mask (pg. 2, ln. 3-pg. 3, ln. 6). The admitted prior art discloses removing the photoresist from the wafer (Fig. 1D), but does not disclose the process used to strip the photoresist from the wafer surface. Murphy discloses an advantageous photoresist stripping process which includes the step of treating the wafer surface with heated deionized water (col. 2, ln. 25-66). Murphy states that by using deionized water at a temperature of 55-65°C to strip the photoresist, the removal rate of the resist is improved (col. 2, ln. 62-66). Murphy states that, in addition to the rapid stripping rate, the heated deionized water strip also provides the benefits of eliminating the necessity of using hazardous chemicals that are required during a typical stripping process (col. 2, ln. 30-34). At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the stripping process of Murphy to remove the photoresist of the admitted prior art because the admitted prior art discloses removing the resist but does not disclose a process for doing so, and Murphy discloses

a process using heated deionized water which offers the benefits of rapid strip rate and no hazardous chemicals.

Regarding claims 7 and 10, the admitted prior art discloses that the semiconductor wafer comprises silicon (pg. 2, ln. 11).

Regarding claims 8 and 11, as stated above, Murphy discloses that the preferred temperature of the deionized water is 55-65°C.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Oikari et al. (US 5,861,064) disclose a process for stripping photoresist material from a substrate, wherein the stripping process involves consecutive cycles of treating the substrate with an acid such that the temperature of the substrate reaches 100-160°C and rinsing the substrate with water at a temperature of 10-100°C.

Bantu et al. (US 5,268,260) disclose a process for developing photoresists, wherein the developing process includes the step of rinsing the resist with water at a temperature of about 17-60°C.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christy L. Novacek whose telephone number is (703) 308-5840. The examiner can normally be reached on Monday-Thursday and alternate Fridays 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (703) 308-4905. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

CLN

December 5, 2002



AMIR ZARABIAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800